

IN THE CLAIMS:

Please substitute the following listing of claims for the previous listing of claims:

1. (Previously presented) A respiratory dispersion for the pulmonary delivery of one or more bioactive agents, the dispersion comprising a suspension medium having dispersed therein a plurality of perforated microstructures, the perforated microstructures comprising at least one bioactive agent wherein said suspension medium comprises at least one propellant and permeates said perforated microstructures.
2. (Previously presented) The respiratory dispersion of claim 1, wherein said propellant comprises a compound selected from the group consisting of 1,1,1,2-tetrafluoroethane, 1,1,1,2,3,3,3-heptafluoro-n-propane, perfluoroethane, monochlorodifluoromethane, 1,1-difluoroethane and combinations thereof.
3. (Previously presented) The respiratory dispersion of claim 1 wherein said propellant is a hydrofluoroalkane propellant.
4. (Previously presented) The respiratory dispersion of claim 3 wherein said hydrofluoroalkane propellant comprises 1,1,1,2-tetrafluoroethane.
5. (Previously presented) The respiratory dispersion of claim 3 wherein said hydrofluoroalkane propellant comprises 1,1,1,2,3,3,3-heptafluoro-n-propane.
6. (Previously presented) The respiratory dispersion of claim 1 wherein said perforated microstructures comprise a surfactant.

7. (Previously presented) The respiratory dispersion of claim 6 wherein said surfactant is selected from the group consisting of phospholipids, nonionic detergents, nonionic block copolymers, ionic surfactants, biocompatible fluorinated surfactants and combinations thereof.

8. (Cancelled).

9. (Previously presented) The dispersion of claim 6 wherein said perforated microstructures comprise oleic acid or its alkali salt.

10. (Previously presented) The respiratory dispersion of claim 6 wherein said surfactant comprises a lipid.

11. (Previously presented) The respiratory dispersion of claim 10 wherein said lipid has a gel to liquid crystal phase transition greater than about 40°C.

12. (Previously presented) The respiratory dispersion of claim 10 wherein said lipid is a phospholipid.

13. (Currently amended) The ~~stable~~ respiratory dispersion of claim 12 wherein said phospholipid is selected from the group consisting of dilauroylphosphatidylcholine, dioleoylphosphatidylcholine, dipalmitoylphosphatidylcholine, ~~disteroylphosphatidylcholine~~ distearylphosphatidylcholine, behenoylphosphatidylcholine, arachidoylphosphatidylcholine and combinations thereof.

14. (Previously presented) The respiratory dispersion of claim 6 wherein said perforated microstructures comprise greater than about 10% w/w surfactant.

15. (Previously presented) The respiratory dispersion of claim 14 wherein said surfactant comprises a phospholipid.

16. (Previously presented) The respiratory dispersion of claim 14 wherein said surfactant comprises oleic acid or its alkali salt.

17. (Previously presented) The respiratory dispersion of claim 1 wherein said suspension medium and said perforated microstructures have a refractive index differential of less than about 0.4.

18. (Previously presented) The respiratory dispersion of claim 1 wherein said suspension medium and said perforated microstructures have a refractive index differential of less than about 0.3.

19. (Previously presented) The respiratory dispersion of claim 1 wherein said perforated microstructures comprise hollow porous microspheres.

20. (Previously presented) The respiratory dispersion of claim 19 wherein the microspheres comprise a surfactant.

21. (Previously presented) The respiratory dispersion of claim 1 wherein the perforated microstructures comprise a mean geometric diameter that is between 1 and 5 μm .

22. (Previously presented) The respiratory dispersion of claim 1 wherein the perforated microstructures comprise a mean geometric diameter that is between 0.5 and 5 μm .

23. (Previously presented) The respiratory dispersion of claim 1 wherein the perforated microstructures comprise a mean geometric diameter that is between 1 and 3 μm .

24. (Previously presented) The respiratory dispersion of claim 1 wherein said bioactive agent has a fine particle fraction following aerosolization of greater than 30%.

25. (Previously presented) The respiratory dispersion of claim 1 wherein said bioactive agent has a fine particle fraction following aerosolization of greater than 50%.

26. (Currently amended) The respiratory dispersion of claim 1 wherein the density differential between the density of the suspended particles perforated microstructures permeated with the suspension medium substantially matches that and the density of the suspension medium is less than about 0.6 g/cm³.

27. (Currently amended) The respiratory dispersion of claim 1 wherein said bioactive agent is selected from the group consisting of antiallergics, bronchodilators, pulmonary lung surfactants, analgesics, antibiotics, leukotriene inhibitors or antagonists, antihistamines, antiinflammatories, antiinfectives, antineoplastics, anticholinergics, anesthetics, anti-tuberculars, imaging agents, cardiovascular agents, enzymes, steroids, genetic material, viral vectors, vaccines, antisense agents, proteins, peptides and combinations thereof.

28. (Previously presented) The respiratory dispersion of claim 1 wherein said bioactive agents are selected from the group consisting of steroids, bronchodilators and peptides.

29. (Previously presented) The respiratory dispersion of claim 1 wherein said bioactive agents are selected from the group consisting of budesonide, fluticasone propionate, salmeterol, formoterol and DNase.

30 - 132. (Cancelled)

133. (Currently amended) A respiratory dispersion for the pulmonary delivery of one or more bioactive agents, the dispersion comprising a suspension medium having dispersed therein a plurality of perforated ~~microparticles~~ microstructures, the perforated microstructures comprising greater than about 20% w/w surfactant and at least one bioactive agent wherein said suspension medium comprises at least one propellant and permeates the perforated microstructures.

134. (Currently amended) The respiratory dispersion of claim 133 wherein said dispersed ~~microparticles~~ perforated microstructures comprise greater than about 30% w/w surfactant.

135. (Original) The respiratory dispersion of claim 133, wherein said propellant comprises a compound selected from the group consisting of 1,1,1,2-tetrafluoroethane, 1,1,1,2,3,3,3- heptafluoro-n-propane, perfluoroethane, monochlorodifluoromethane, 1, 1-difluoroethane and combinations thereof.

136. (Original) The respiratory dispersion of claim 133 wherein said propellant is a hydrofluoroalkane propellant.

137. (Original) The respiratory dispersion of claim 136 wherein said hydrofluoroalkane propellant comprises 1,1,1,2-tetrafluoroethane.

138. (Original) The respiratory dispersion of claim 133 wherein said surfactant is selected from the group consisting of phospholipids, nonionic detergents, nonionic block copolymers, ionic surfactants, biocompatible fluorinated surfactants and combinations thereof.

139. (Cancelled.)

140. (Original) The respiratory dispersion of claim 133 wherein said perforated microstructures comprise oleic acid or its alkali salt.

141. (Original) The respiratory dispersion of claim 133 wherein said surfactant comprises a lipid.

142. (Original) The respiratory dispersion of claim 141 wherein said lipid has a gel to liquid crystal phase transition greater than about 40°C.

143. (Original) The respiratory dispersion of claim 141 wherein said lipid is a phospholipid.

144. (Currently amended) The respiratory dispersion of claim 143 wherein said phospholipid is selected from the group consisting of dilaurylphosphatidylcholine, dioleoylphosphatidylcholine, dipalmitoylphosphatidylcholine, ~~disteroylphosphatidylcholine~~ distearoylphosphatidylcholine, behenoylphosphatidylcholine, arachidoylphosphatidylcholine and combinations thereof.

145. (Cancelled.)

146. (Original) The respiratory dispersion of claim 145 wherein said perforated microstructures comprise hollow porous microspheres.

147. (Currently amended) The respiratory dispersion of claim 146 wherein said hollow porous ~~micro-spheres~~ microspheres have a mean aerodynamic diameter between about 0.5 to 5 μm .

148. (Previously presented) The respiratory dispersion of claim 133 wherein the perforated microstructures comprise a mean geometric diameter that is between 1 and 5 μm .

149. (Currently amended) The respiratory dispersion of claim 133 wherein said bioactive agent is selected from the group consisting of antiallergics, bronchodilators, pulmonary lung surfactants, analgesics, antibiotics, leukotriene inhibitors or antagonists, antihistamines, antiinfectives, antiinflammatories, antineoplastics, anticholinergics, anesthetics, anti-tuberculars, imaging agents, cardiovascular agents, enzymes, steroids, genetic material, viral vectors, vaccines, antisense agents, proteins, peptides and combinations thereof.

150. (Previously presented) The respiratory dispersion of claim 133 wherein said bioactive agents are selected from the group consisting of budesonide, fluticasone propionate, salmeterol, formoterol and DNase.

151. (Previously presented) A respiratory dispersion for the pulmonary delivery of one or more bioactive agents, the dispersion comprising a suspension medium having dispersed therein a plurality of perforated microstructures, the perforated microstructures comprising a structural matrix of phospholipid and at least one bioactive agent, wherein said suspension medium comprises at least one propellant and permeates said perforated microstructures.

152. (Previously presented) The respiratory dispersion of claim 151, wherein said propellant comprises a compound selected from the group consisting of 1,1,1,2-tetrafluoroethane, 1,1,1,2,3,3,3-heptafluoro-n-propane, perfluoroethane, monochlorodifluoromethane, 1,1-difluoroethane and combinations thereof.

153. (Previously presented) The respiratory dispersion of claim 151 wherein said propellant is a hydrofluoroalkane propellant.

154. (Previously presented) The respiratory dispersion of claim 153 wherein said hydrofluoroalkane propellant comprises 1,1,1,2-tetrafluoroethane.

155. (Previously presented) The respiratory dispersion of claim 153 wherein said hydrofluoroalkane propellant comprises 1,1,1,2,3,3,3-heptafluoro-n-propane.

156. (Previously presented) The respiratory dispersion of claim 151 wherein said perforated microstructures comprise a surfactant.

157. (Previously presented) The respiratory dispersion of claim 156 wherein said surfactant is selected from the group consisting of phospholipids, nonionic detergents, nonionic block copolymers, ionic surfactants, biocompatible fluorinated surfactants and combinations thereof.

158. (Previously presented) The respiratory dispersion of claim 156 wherein said perforated microstructures comprise oleic acid or its alkali salt.

159. (Previously presented) The respiratory dispersion of claim 156 wherein said surfactant comprises a lipid.

160. (Currently amended) The respiratory dispersion of claim 151 wherein said phospholipid phospholipid has a gel to liquid crystal phase transition greater than about 40°C.

161. (Currently amended) The respiratory dispersion of claim 151 wherein said phospholipid is selected from the group consisting of dilauroylphosphatidylcholine, dioleoylphosphatidylcholine, dipalmitoylphosphatidylcholine, ~~disteroylphosphatidylcholine~~ distearoylphosphatidylcholine, behenoylphosphatidylcholine, arachidoylphosphatidylcholine and combinations thereof.

162. (Previously presented) The respiratory dispersion of claim 151 wherein said suspension medium and said perforated microstructures have a refractive index differential of less than about 0.4.

163. (Previously presented) The respiratory dispersion of claim 151 wherein said suspension medium and said perforated microstructures have a refractive index differential of less than about 0.3.

164. (Previously presented) The respiratory dispersion of claim 151 wherein said perforated microstructures comprise hollow porous microspheres.

165. (Previously presented) The respiratory dispersion of claim 151 wherein the perforated microspheres comprise calcium.

166. (Previously presented) The respiratory dispersion of claim 151 wherein the perforated microstructures comprise a mean geometric diameter that is between 1 and 5 μm .

167. (Previously presented) The respiratory dispersion of claim 151 wherein the perforated microstructures comprise a mean geometric diameter that is between 0.5 and 5 μm .

168. (Previously presented) The respiratory dispersion of claim 151 wherein the perforated microstructures comprise a mean geometric diameter that is between 1 and 3 μm .

169. (Previously presented) The respiratory dispersion of claim 151 wherein said bioactive agent has a fine particle fraction following aerosolization of greater than 30%.

170. (Currently amended) The respiratory dispersion of claim 151 wherein the density differential between the density of the suspended particles perforated microstructures permeated with the suspension medium substantially matches that and the density of the suspension medium is less than about 0.6 g/cm³

171. (Currently amended) The respiratory dispersion of claim 151 wherein said bioactive agent is selected from the group consisting of antiallergics, bronchodilators, pulmonary lung surfactants, analgesics, antibiotics, leukotriene inhibitors or antagonists, antihistamines, antiinfectives, antiinflammatories, antineoplastics, anticholinergics, anesthetics, anti-tuberculars, imaging agents, cardiovascular agents, enzymes, steroids, genetic material, viral vectors, vaccines, antisense agents, proteins, peptides and combinations thereof.

172. (Previously presented) The respiratory dispersion of claim 151 wherein said bioactive agents are selected from the group consisting of steroids, bronchodilators and peptides.

173. (Previously presented) The respiratory dispersion of claim 151 wherein said bioactive agents are selected from the group consisting of budesonide, fluticasone propionate, salmeterol, formoterol and DNase.

174. (Previously presented) A respiratory dispersion for the pulmonary delivery of one or more bioactive agents, the dispersion comprising a suspension medium having dispersed therein a plurality of perforated microstructures, the perforated microstructures comprising a structural matrix of phospholipid, calcium, and at least one bioactive agent, wherein said suspension medium comprises at least one propellant and permeates said perforated microstructures.

175. (Previously presented) The respiratory dispersion of claim 174 wherein said propellant comprises a compound selected from the group consisting of 1,1,1,2-tetrafluoroethane, 1,1,1,2,3,3,3-heptafluoro-n-propane, perfluoroethane, monochlorodifluoromethane, 1,1-difluoroethane and combinations thereof.

176. (Previously presented) The respiratory dispersion of claim 174 wherein said propellant is a hydrofluoroalkane propellant.

177. (Previously presented) The respiratory dispersion of claim 176 wherein said hydrofluoroalkane propellant comprises 1,1,1,2-tetrafluoroethane.

178. (Previously presented) The respiratory dispersion of claim 176 wherein said hydrofluoroalkane propellant comprises 1,1,1,2,3,3,3-heptafluoro-n-propane.

179. (Previously presented) The respiratory dispersion of claim 174 wherein said perforated microstructures comprise a surfactant.

180. (Previously presented) The respiratory dispersion of claim 179 wherein said surfactant is selected from the group consisting of phospholipids, nonionic detergents, nonionic block copolymers, ionic surfactants, biocompatible fluorinated surfactants and combinations thereof.

181. (Previously presented) The respiratory dispersion of claim 179 wherein said perforated microstructures comprise oleic acid or its alkali salt.

182. (Previously presented) The respiratory dispersion of claim 179 wherein said surfactant comprises a lipid.

183. (Currently amended) The respiratory dispersion of claim 174 wherein said ~~phospholipid~~ phospholipid has a gel to liquid crystal phase transition greater than about 40°C.

184. (Currently amended) The respiratory dispersion of claim 174 wherein said phospholipid is selected from the group consisting of dilauroylphosphatidylcholine, dioleoylphosphatidylcholine, dipalmitoylphosphatidylcholine, ~~disteroylphosphatidylcholine~~ distearoylphosphatidylcholine, behenoylphosphatidylcholine, arachidoylphosphatidylcholine and combinations thereof.

185. (Previously presented) The respiratory dispersion of claim 174 wherein said suspension medium and said perforated microstructures have a refractive index differential of less than about 0.4.

186. (Previously presented) The respiratory dispersion of claim 174 wherein said suspension medium and said perforated microstructures have a refractive index differential of less than about 0.3.

187. (Previously presented) The respiratory dispersion of claim 174 wherein said perforated microstructures comprise hollow porous microspheres.

188. (Previously presented) The respiratory dispersion of claim 174 wherein the perforated microstructures comprise a mean geometric diameter that is between 1 and 5 μm .

189. (Previously presented) The respiratory dispersion of claim 174 wherein the perforated microstructures comprise a mean geometric diameter that is between 0.5 and 5 μm .

190. (Previously presented) The respiratory dispersion of claim 174 wherein the perforated microstructures comprise a mean geometric diameter that is between 1 and 3 μm .

191. (Previously presented) The respiratory dispersion of claim 174 wherein said bioactive agent has a fine particle fraction following aerosolization of greater than 30%.

192. (Currently amended) The respiratory dispersion of claim 174 wherein the density differential between the density of the suspended particles perforated microstructures permeated with the suspension medium substantially matches that and the density of the suspension medium is less than about 0.6 g/cm³.

193. (Currently amended) The respiratory dispersion of claim 174 wherein said bioactive agent is selected from the group consisting of antiallergics, bronchodilators, pulmonary lung surfactants, analgesics, antibiotics, leukotriene inhibitors or antagonists, antihistamines, antiinfectives, antiinflammatories, antineoplastics, anticholinergics, anesthetics, anti-tuberculars, imaging agents, cardiovascular agents, enzymes, steroids, genetic material, viral vectors, vaccines, antisense agents, proteins, peptides and combinations thereof.

194. (Previously presented) The respiratory dispersion of claim 174 wherein said bioactive agents are selected from the group consisting of steroids, bronchodilators and peptides.

195. (Previously presented) The respiratory dispersion of claim 174 wherein said bioactive agents are selected from the group consisting of budesonide, fluticasone propionate, salmeterol, formoterol and DNase.

196. (Currently amended) A respiratory dispersion for the pulmonary delivery of one or more bioactive agents, the dispersion comprising a suspension medium having dispersed therein a plurality of perforated microstructures, the suspension medium comprising at least one propellant that permeates said perforated microstructures, and the perforated microstructures comprising at least one bioactive agent in a structural matrix comprising at least one phospholipid selected from the group consisting of dilaurylphosphatidylcholine, dioleoylphosphatidylcholine, dipalmitoylphosphatidylcholine, ~~disteroylphosphatidylcholine~~ distearoylphosphatidylcholine, behenoylphosphatidylcholine, arachidoylphosphatidylcholine and combinations thereof.

197. (Previously presented) The respiratory dispersion of claim 196 wherein the perforated microspheres comprise calcium.

198. (Previously presented) The respiratory dispersion of claim 196 wherein the perforated microspheres comprise magnesium.

199. (Previously presented) The respiratory dispersion of claim 196 wherein the perforated microstructures comprise a mean geometric diameter that is between 1 and 5 μm .

200. (Previously presented) The respiratory dispersion of claim 196 wherein the perforated microstructures comprise a mean geometric diameter that is between 0.5 and 5 μm .

201. (Previously presented) The respiratory dispersion of claim 196 wherein the perforated microstructures comprise a mean geometric diameter that is between 1 and 3 μm .

202. (Currently amended) A respiratory dispersion for the pulmonary delivery of one or more bioactive agents, the dispersion comprising a suspension medium having dispersed therein a plurality of perforated microstructures, the suspension medium comprising at least one propellant that permeates said perforated microstructures, and the perforated microstructures comprising:

a structural matrix comprising at least one phospholipid selected from the group consisting of dilauroylphosphatidylcholine, dioleoylphosphatidylcholine, dipalmitoylphosphatidylcholine, ~~disteroylphosphatidylcholine~~ distearylphosphatidylcholine, behenoylphosphatidylcholine, arachidoylphosphatidylcholine and combinations thereof; and

at least one bioactive agent selected from the group consisting of antiallergics, bronchodilators, pulmonary lung surfactants, analgesics, antibiotics, leukotriene inhibitors or antagonists, antihistamines, antiinfectives, antiinflammatories, antineoplastics, anticholinergics, anesthetics, anti-tuberculars, imaging agents, cardiovascular agents, enzymes, steroids, genetic material, viral vectors, vaccines, antisense agents, proteins, peptides and combinations thereof.

203. (Previously presented) The respiratory dispersion of claim 202 wherein the perforated microspheres comprise calcium.

204. (Previously presented) The respiratory dispersion of claim 202 wherein the perforated microspheres comprise magnesium.

205. (Previously presented) The respiratory dispersion of claim 202 wherein the perforated microstructures comprise a mean geometric diameter that is between 1 and 5 μm .

206. (Previously presented) The respiratory dispersion of claim 202 wherein the perforated microstructures comprise a mean geometric diameter that is between 0.5 and 5 μm .

207. (Previously presented) The respiratory dispersion of claim 202 wherein the perforated microstructures comprise a mean geometric diameter that is between 1 and 3 μm .